

FORM PTO-1390 (Modified)  
(REV 10-95)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

193413US0PCT

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/582216

INTERNATIONAL APPLICATION NO.

PCT/EP98/08418 ✓

INTERNATIONAL FILING DATE

18 December 1998 ✓

PRIORITY DATE CLAIMED

20 January 1998 ✓

TITLE OF INVENTION

FLOORING ADHESIVES

APPLICANT(S) FOR DO/EO/US

Peter FICKEISEN, et al. ✓

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.  
A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☐ Certificate of Mailing by Express Mail
19. ☒ Other items or information:

Request for Consideration of Documents Cited in International Search Report

Notice of Priority

PCT/IB/304

PCT/IB/308

Amended Sheets (Pages 11 and 12)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR <b>09/582216</b> )	INTERNATIONAL APPLICATION NO. PCT/EP98/08418	ATTORNEY'S DOCKET NUMBER 193413US0PCT
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20. The following fees are submitted:				CALCULATIONS PTO USE ONLY	
<b>BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5) ) :</b>					
<input checked="" type="checkbox"/>	Search Report has been prepared by the EPO or JPO .....	\$840.00			
<input type="checkbox"/>	International preliminary examination fee paid to USPTO (37 CFR 1.482) .....	\$670.00			
<input type="checkbox"/>	No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) .....	\$760.00			
<input type="checkbox"/>	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....	\$970.00			
<input type="checkbox"/>	International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) .....	\$96.00			
<b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				\$840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	8 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$78.00	\$0.00	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				\$0.00	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$840.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). <input type="checkbox"/>				\$0.00	
<b>SUBTOTAL =</b>				\$840.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$0.00	
<b>TOTAL NATIONAL FEE =</b>				\$840.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00	
<b>TOTAL FEES ENCLOSED =</b>				\$840.00	
				Amount to be refunded	\$
				charged	\$

- ☒ A check in the amount of **\$840.00** to cover the above fees is enclosed.
- ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **15-0030** A duplicate copy of this sheet is enclosed.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:



**22850**

PATENT TRADEMARK OFFICE

**WILLIAM E. BEAUMONT**  
REGISTRATION NUMBER 30,996

VEUSTADT, P.C.

SIGNATURE

**Norman F. Oblon**

NAME

**24,618**

REGISTRATION NUMBER

DATE

*July 20, 2000*

09/582216

533 Rec'd PCT/PTO 20 JUL 2000

193413US O PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :

PETER FICKEISEN ET AL : ATTN: APPLICATION DIVISION

SERIAL NO: NEW PCT APPLICATION :  
(Based on PCT/EP98/08418)

FILED: HEREWITH :

FOR: FLOORING ADHESIVES :

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows.

IN THE CLAIMS

Claim 3, line 1, delete "or 2".

Claim 4, line 1, replace "any of claims 1 to 3" with --claim 1--.

Claim 5, line 1, replace "any of claims 1 to 4" with --claim 1--.

Claim 6, lines 1-2, replace "any of claims 1 to 5" with --claim 1--.

Claim 7, lines 1-2, replace "any of claims 1 to 5" with --claim 1--.

Claim 8, line 2, replace "any of claims 1 to 6" with --claim 1--.

REMARKS

The claims have been amended to remove multiple dependencies. No new matter has been added to this application by these amendments.

Applicants submit the present application is ready for examination on the merits.  
Early notice to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Norman F. Oblon  
Attorney of Record  
Registration No. 24,618

James J. Kelly, Ph.D.  
Registration No. 41,504



**22850**

WILLIAM E. BEAUMONT  
REGISTRATION NUMBER 30,996

(703) 413-3000  
Fax #: (703) 413-2220  
JK/law

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## Flooring adhesives

The present invention relates to an aqueous composition  
5 comprising a mixture of

from 10 to 50% by weight of a polymer A) having a gel content of  
less than 40% by weight and a number-  
average molecular weight  $M_n$  of the  
10 soluble fractions of less than 30,000  
and

from 50 to 90% by weight of a filler B), the amounts by weight  
being based on the weight sum of the  
15 polymer A) and of the filler B).

The invention additionally relates to the use of this aqueous  
composition as an adhesive for floor coverings.

20 Adhesives are generally required to display good adhesion - in  
other words, to stick well to the substrate - and good cohesion -  
in other words, to hold together well within the adhesive layer.  
Adhesives for floor coverings are subject to particular  
requirements. Here, there is a desire in particular for good wet  
25 bonding capacity. A good wet bonding capacity means that after a  
carpet, for example, has been laid on the substrate which is  
coated with the aqueous dispersion the carpet can initially still  
be aligned and its position corrected, but that soon after a  
slipproof bond develops whose strength increases as drying  
30 progresses.

A good dry bonding capacity means that even after a prolonged  
period of ventilation a carpet, after having been laid on the  
substrate, which is then dry, gives a firm, slipproof bond.  
35

A further desire is to dispense with volatile organic  
constituents, such as solvents or plasticizers, in order to avoid  
subsequent exposure to corresponding emissions.

40 A low binder content is also desirable. When tackifiers are  
added, the level of properties should remain as good as possible  
- especially the cohesion.

Flooring adhesives are already known from EP-A-490191 and  
45 WO 95/21884.

It is an object of the present invention to provide flooring adhesives having improved performance properties, in particular a good wet bonding capacity.

5 A further object is to keep the binder content in the flooring adhesives as low as possible on cost grounds. Where the addition of tackifiers (tackifying resins) is desired, this should be possible without adverse effect on, for example, wet and dry bonding capacity.

10

We have found that these objects are achieved by the aqueous composition described above and by its use as a flooring adhesive.

15 The aqueous composition comprises preferably

from 10 to 45% by weight, with particular preference from 15 to 40% by weight, of the polymer A) defined at the outset, and

20

from 55 to 90% by weight, with particular preference from 60 to 85% by weight, of a filler B).

The percentages by weight are based in each case on the weight

25 sum of A) and B).

The polymer A) is preferably a free-radically polymerized polymer of ethylenically unsaturated monomers.

30 The polymer preferably comprises principal monomers selected from  $C_1$ - $C_{20}$ -alkyl (meth)acrylates, vinyl esters of carboxylic acids having up to 20 carbons, vinylaromatic compounds having up to 20 carbon atoms, ethylenically unsaturated nitriles, vinyl halides, nonaromatic hydrocarbons having at least 2 conjugated  
35 double bonds, or mixtures of these monomers.

The abovementioned monomers and mixtures thereof are preferably present in the polymer to an extent of from 60 to 100% by weight, preferably from 80 to 100% by weight and, with particular

40 preference, from 90 to 99.8% by weight, based on the polymer.

Mention may be made specifically, for example, of  $C_1$ - $C_{10}$ -alkyl (meth)acrylates, such as methyl methacrylate, methyl acrylate, n-butyl acrylate, ethyl acrylate and 2-ethylhexyl acrylate.

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## 3

Mixtures of the (meth)acrylic alkyl esters are also particularly suitable.

Examples of vinyl esters of carboxylic acids having 1 to 5 20 carbon atoms are vinyl laurate, vinyl stearate, vinyl propionate, Versatic acid vinyl ester and vinyl acetate.

Suitable vinylaromatic compounds are vinyltoluene,  $\alpha$ - and p-methylstyrene,  $\alpha$ -butylstyrene, 4-n-butylstyrene, 4-n-decyl-10 styrene and, preferably, styrene. Examples of nitriles are acrylonitrile and methacrylonitrile.

The vinyl halides are ethylenically unsaturated compounds substituted by chlorine, fluorine or bromine, preferably vinyl15 chloride and vinylidene chloride.

As nonaromatic hydrocarbons having 2 to 8 carbon atoms and at least two olefinic double bonds there may be mentioned butadiene, isoprene and chloroprene.

20 Particular preference is given to (meth)acrylic esters and mixtures thereof.

Further monomers, which may be present in the polymer to the25 extent, for example, of from 0 to 40% by weight, preferably from 0 to 20% by weight and, with particular preference, from 0.2 to 10% by weight, are, in particular,  $C_1$ - $C_{10}$ -hydroxyalkyl (meth)acrylates, (meth)acrylamide and its N- $C_1$ - $C_4$ -alkyl-substituted derivatives, ethylenically unsaturated carboxylic30 acids, dicarboxylic acids, their monoesters and anhydrides, examples being (meth)acrylic acid, maleic acid, fumaric acid, maleic anhydride, maleic and fumaric monoesters and itaconic acid. Very particular preference is given to a content of from 0.2 to 5% by weight of an ethylenically unsaturated carboxylic35 acid.

The glass transition temperature of the polymer is preferably from  $-50$  to  $+20^\circ\text{C}$ , in particular from  $-35^\circ\text{C}$  to  $+20^\circ\text{C}$ , with particular preference from  $-30^\circ\text{C}$  to  $0^\circ\text{C}$  and, with very particular40 preference, from  $-28^\circ\text{C}$  to  $-5^\circ\text{C}$ .

The glass transition temperature of the polymer can be determined by customary methods such as differential thermoanalysis or differential scanning calorimetry (see e.g. ASTM 3418/82,45 midpoint temperature).

The gel content of the polymer A) is below 40% by weight, preferably below 30% by weight and, with particular preference, below 20% by weight, based on the polymer A). The gel content should preferably be more than 5% by weight.

5

The gel content is the content of insoluble constituents. It is defined and determined by the following method: the dispersion is dried at 21°C to give a film approximately 1 mm thick. One gram of the polymer film is added to 100 ml of tetrahydrofuran and is  
10 allowed to stand at 21°C for a week. Thereafter, the resulting solution or mixture is filtered with the aid of a cloth filter (mesh size 125  $\mu$ m). The residue (swollen film) is dried at 21°C for 2 days in a vacuum drying cabinet and then weighed. The gel content is the mass of the weighed residue, divided by the mass  
15 of the polymer film employed.

The tetrahydrofuran-soluble fractions of the polymer are, correspondingly, from 60 to 100% by weight, preferably from 70 to 100% by weight, with particular preference from 80 to 100% by  
20 weight and, in particular, up to 95% by weight, based on the polymer.

The number-average molecular weight  $M_n$  of these soluble fractions is preferably less than 20,000, preferably less than 15,000, and  
25 the weight-average molecular weight  $M_w$  is preferably greater than 250,000 (as determined by gel permeation chromatography with polystyrene as standard on a polymer solution in tetrahydrofuran following sedimentation of the insoluble constituents).

30 Generally, however,  $M_n$  is not less than 5000 g/mol and  $M_w$  is not more than 800,000 g/mol.

The polymer is prepared by free-radical polymerization. Suitable methods of polymerization, such as bulk, solution, suspension or  
35 emulsion polymerization, are known to the skilled worker.

The copolymer is preferably prepared by solution polymerization with subsequent dispersion in water or, with particular preference, by emulsion polymerization, to give aqueous copolymer  
40 dispersions.

An emulsion polymerization can be conducted batchwise, with or without the use of seed latices, with all or some constituents of the reaction mixture being included in the initial charge, or,  
45 preferably, with some being included in the initial charge and the remainder of all or some constituents of the reaction mixture being metered in subsequently, or else in accordance with the



metering technique without an initial charge.

In emulsion polymerization, the monomers can as usual be polymerized in the presence of a water-soluble initiator and an  
5 emulsifier at preferably from 30 to 95°C.

Examples of suitable initiators are sodium, potassium and ammonium persulfate, tert-butyl hydroperoxides, water-soluble azo compounds, or redox initiators, such as  $H_2O_2$ /ascorbic acid.

10

Examples of the emulsifiers used are alkali metal salts of relatively long-chain fatty acids, alkyl sulfates, alkyl-sulfonates, alkylated arylsulfonates or alkylated biphenyl ether sulfonates. Further suitable emulsifiers are reaction products of  
15 alkylene oxides, especially ethylene or propylene oxide, with fatty alcohols, fatty acids or phenol, or else with alkylphenols.

In the case of aqueous secondary dispersions the copolymer is first of all prepared by solution polymerization in an organic  
20 solvent and then is dispersed in water without using an emulsifier or dispersing auxiliary but with addition of salt-forming agents, for example ammonia for carboxyl-containing copolymers. The organic solvent can be removed by distillation. The preparation of aqueous secondary dispersions is known to the  
25 skilled worker and is described, for example, in DE-A-37 20 860.

In the course of polymerization it is possible to employ regulators to adjust the molecular weight. Suitable examples are SH-containing compounds, such as mercaptoethanol, mercapto-  
30 propanol, thiophenol, thioglycerol, ethyl thioglycolate, methyl thioglycolate and tert-dodecyl mercaptan.

The solids content of the resulting polymer dispersions is preferably from 40 to 80% and, with particular preference, from  
35 45 to 75% by weight. High polymer solids contents can be established, for example, by techniques which are described in the German Patent Application P 4 307 683.1 or in EP 37 923.

In addition to the polymer the aqueous composition comprises at  
40 least the filler B). Examples of suitable such fillers are finely ground or precipitated chalks having an average particle diameter of in general from 2 to 50  $\mu m$ , and/or quartz flour having a customary average particle diameter of from 3 to 50  $\mu m$ .

45 The composition may also include wetting agents or dispersants for the fillers, for example; thickeners, and also, for example,

further customary additives, such as defoamers and preservatives.

- Wetting or dispersing agents can be present in the aqueous composition in amounts, for example, of from 0 to 5% by weight,
- 5 thickeners in amounts from 0 to 10% by weight, preservatives in amounts from 0 to 1% by weight and defoamers in amounts from 0 to 5% by weight. These amounts by weight relate to the sum of all constituents of the aqueous composition with the exception of the water.
- 10 The composition is preferably essentially free and with particular preference totally free from organic solvents and plasticizers such as butyl acetate, toluene or phthalates, for example. It therefore comprises organic compounds having a
- 15 boiling point below 300°C at atmospheric pressure (1 bar) in amounts of less than preferably 0.5% by weight, with particular preference less than 0.1% by weight and, with very particular preference, less than 0.05% by weight, and in particular less than 0.01% by weight. It is particularly preferred for the
- 20 composition of the invention or the flooring adhesive of the invention to meet the requirements of freedom from emissions as defined by GEV [German Association for Controlled Emission Installation Materials].
- 25 The emissions are determined by a chamber test method. The flooring adhesive or composition of the invention is applied at a rate of 300 g/m<sup>2</sup> to a glass plate whose size depends on the volume of the chamber. The chamber is loaded with 0.4 m<sup>2</sup> of the coated glass plate per m<sup>3</sup> of chamber volume. The emission conditions in
- 30 the stainless steel testing chamber (volume at least 125 liters) are 23°C, 50% relative atmospheric humidity and an hourly air-change regime which brings about total exchange of the air every 2 hours. The long-term emissions are determined after 10 days. For this purpose, a defined volume of the airstream is
- 35 passed over adsorbents. Following desorption, the emitted substances are determined by gas (GC-MS coupling) or liquid chromatography. The long-term emissions are determined in µg/m<sup>3</sup>, using toluene as standard substance. Emitted substances whose chamber concentration is greater than 20 µg/m<sup>3</sup> are identified, and
- 40 with the pure substance identified and calibrated [sic]. Emitted substances whose chamber concentration is less than 20 µg/m<sup>3</sup> are not identified individually. In such cases, calibration take place with toluene.
- 45 The values for all the substances are added up.

In the case of the composition of the invention, the emission value for the sum of all organic compounds is not more than preferably 1500  $\mu\text{g}/\text{m}^3$  and in particular not more than 500  $\mu\text{g}/\text{m}^3$ .

- 5 The composition can comprise tackifying resins (tackifiers), such as rosins or modified rosins, based, for example, on hydrogenated abietic acid or abietic esters.

The content of tackifiers can preferably be from 1 to 40 parts by weight, based on 100 parts by weight of the sum of polymer A) and filler B).

The aqueous composition can be prepared in a simple manner by adding the fillers and any further additives with stirring to the aqueous polymer dispersion resulting from the emulsion polymerization.

The water content of the finished formulation is generally from 7 to 50, in particular from 10 to 30% by weight, based on the overall aqueous formulation.

The aqueous composition is particularly suitable as an adhesive for bonding substrates made from plastic, wood, metal and textiles formed from woven and/or nonwoven fibers.

- 25 The aqueous formulation is particularly suitable as a flooring adhesive for carpets or other floor coverings made, for example, from PVC (in configurations as multilayer coverings or homogeneous coverings), foam coverings with a textile backing (e.g. jute), polyester nonwoven, rubber coverings, textile coverings with, for example, various backings (for instance, polyurethane foam, styrene-butadiene foam, a textile secondary backing), needlefelt floor coverings, polyolefin coverings or linoleum coverings, on substrates such as wood, screeding, concrete, ceramic tiles, metal substrates or the like.

The adhesive can be applied to the substrate using, for example, a toothed applicator. After customary venting, the floor covering is installed. In terms of processing, the adhesive of the invention resembles the solvent-containing synthetic-resin adhesives and the conventional single-side dispersion adhesives. In terms of ease of application, the novel adhesive resembles solvent-containing adhesives. The adhesive composition of the invention features a good level of performance properties such as peel strength, shear strength, wet bonding capacity and dry gripping capacity. The composition of the invention achieves this good level of properties with a markedly reduced content of

binder, i.e. of polymer A). Even following the addition of tackifiers in order, for example, to increase the tackiness, the wet bonding strength remains at a high level.

- 5 The parts and percentages indicated in the examples which follow are by weight unless specified otherwise.

### Examples

#### 10 I. Dispersions

- The table below lists a number of commercial products which are recommended for flooring adhesives, for comparison. In its monomer composition, Acronal DS corresponds to Acronal 378 and therefore has the same glass transition temperature ( $T_g$ ). The content of regulator was varied in order to obtain the desired molecular weight.

Table 1: Physical data of the dispersions

20	Dispersion	SC	$M_n$	$M_w$	$M_w/M_n$	Gel content % by weight	$T_g/^\circ\text{C}$
	Acronal A200 for comparison	70%	26,000	416,00 [sic]	16	54%	-47
25	Acronal A323 for comparison	55%	5800	753,000	130	70%	-22
	Acronal 378 for comparison	62%	22,000	437,000	20	68%	-22
	Acronal DS	62%	11,900	354,000	30	15%	-22

30 SC: Solids content

$T_g$ : Glass transition temperature

#### II. Flooring adhesives

- 35 The dispersions were mixed with filler and with further additives.

Table 2 sets out the co-components and their proportions by weight.

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Table 2

Experiment	1	2	3	4
Acronal A 200	24.4			
5 Acronal A 323		31.0		
Acronal DS 378			27.5	
Acronal DS				27.5
2% strength Latekoll D solution <sup>1)</sup>	14.6	8.0	11.5	11.5
10 Agitan 281 <sup>2)</sup>	0.2	0.2	0.2	0.2
Lutensol AO 109 <sup>3)</sup>	0.5	0.5	0.5	0.5
Lumiten N-OG <sup>4)</sup>	0.5	0.5	0.5	0.5
Pigmentverteiler NL <sup>5)</sup>	0.5	0.5	0.5	0.5
15 Calgon N 30% <sup>6)</sup>	1.0	1.0	1.0	1.0
Sodium gluconate <sup>7)</sup>	1.5	1.5	1.5	1.5
Burez LE 3004 <sup>8)</sup>	11.0	11.0	11.0	11.0
Ulmer Weiss XM <sup>9)</sup>	45.8	45.8	45.8	45.8

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The amount of the polymer dispersion was determined so as to give in each case 17 parts by weight of polymer (solids).

25 The amount of thickener (Latekoll) was determined so that the viscosity was equal.

- 1): Thickener  
 2): Defoamer  
 3): Emulsifier  
 30 4): Emulsifier  
 5): Dispersant for pigment  
 6): Dispersant for pigment  
 7): -  
 8): Tackifier (resin based on the triethylene glycol ester of  
 35 abietic acid)  
 9): Filler

### III. Performance testing

40 - Wet bonding capacity (WBC):

The adhesive is applied with a DIN blade to a cement fiberboard panel (e.g. Eternit® 2000; 20 x 50 cm) in the direction of takeoff. The amount applied is about 350 -  
 45 400 g/m<sup>2</sup>. Needlefelt floor covering strips are placed in the bed of adhesive following a venting period of 10 minutes and are pressed on with a 2.5 kg roller by rolling backward and

## 10

forward 3 times. At the stated intervals of time, the strips are pulled off with a takeoff apparatus, during which the increase in the peel resistance is determined in N 5 cm.

5 The results are set out in Table 3.

- Peel strength: determined in accordance with DIN 53269

Table 3

	Peel values N/mm		WBC N/5 cm			
	10 min	30 min	10 min	15 min	20 min	30 min
10 1 (for comparison)	0.34	0.24	4	7	9	8
15 2 (for comparison)	0.91	0.07	2	5	11	22
3 (for comparison)	1.38	0.18	4	10	19	34
4	1.22	0.24	12	26	44	49

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533 Rec'd PCT/PTO 20 JUL 2000

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We claim:

1. An aqueous composition comprising a mixture of  
5 from 10 to 50% by weight of a polymer A) having a gel content of less than 40% by weight and a number-average molecular weight  $M_n$  of the soluble fractions of less than 30,000  
10 and which comprises from 60 to 100% by weight, based on the polymer, of  $C_1$ - to  $C_{20}$ -alkyl (meth)acrylates and mixtures thereof and  
15 from 50 to 90% by weight of a filler B), the amounts by weight being based on the weight sum of the polymer A) and of the filler B).
2. An aqueous composition as claimed in claim 1, where the  
20 proportion by weight of the polymer is from 10 to 45% by weight and that of the filler is from 55 to 90% by weight.
3. An aqueous composition as claimed in claim 1 or 2, where the  
25 polymer is present in the form of an aqueous dispersion with a concentration of from 40 to 75%.
4. An aqueous composition as claimed in any of claims 1 to 3,  
where the content of volatile organic constituents - that is, organic compounds having a boiling point at 1 bar of less  
30 than 300°C - is less than 0.5% by weight, based on the aqueous composition.
5. An aqueous composition as claimed in any of claims 1 to 4,  
35 where the glass transition temperature of the polymer A) is from -50°C to +20°C.
6. The use of an aqueous composition as claimed in any of claims 1 to 5 as an adhesive.
- 40 7. The use of an aqueous composition as claimed in any of claims 1 to 5 as a flooring adhesive.

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ART 34 AMDT

12

8. A substrate coated with an aqueous composition as claimed in any of claims 1 to 6.

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Flooring adhesives

Abstract

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An aqueous composition comprises a mixture of

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from 10 to 50% by weight of a polymer A) having a gel content of less than 40% by weight and a number-average molecular weight  $M_n$  of the soluble fractions of less than 30,000 and

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from 50 to 90% by weight of a filler B), the amounts by weight being based on the weight sum of the polymer and of the filler.

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# Declaration, Power of Attorney

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0050/048723

We (I), the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Flooring adhesives

the specification of which

☐ is attached hereto.

☐ was filed on \_\_\_\_\_ as

Application Serial No. \_\_\_\_\_

and amended on \_\_\_\_\_.

☒ was filed as PCT international application

Number PCT/EP 98/08418 ✓

on december 18, 1998 ✓

and was amended under PCT Article 19

on \_\_\_\_\_ (if applicable).

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s)

Application No.	Country	Day/Month/Year	Priority Claimed
19801892.4 ✓	Germany ✓	20 January 1998 ✓	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

1-00 Peter Fickeisen  
NAME OF INVENTOR

Peter Fickeisen

Signature of Inventor

Date January 7, 1999

Hauptstr.45

67246 Dirmstein

Germany DEX

Citizen of: Germany

Post Office Address: same as residence

2-00 Martin Meister  
NAME OF INVENTOR

Martin Meister

Signature of Inventor

Date January 7, 1999

Lincolnstr.19

67434 Neustadt

Germany DEX

Citizen of: Germany

Post Office Address: same as residence

3-00 Bernd Reck  
NAME OF INVENTOR

Bernd Reck

Signature of Inventor

Date January 7, 1999

Beim Bergtor 14

67269 Grünstadt

Germany DEX

Citizen of: Germany

Post Office Address: same as residence

4-00 Dieter Urban  
NAME OF INVENTOR

Dieter Urban

Signature of Inventor

Date January 7, 1999

Kurt-Schumacher-Str.51a

67346 Speyer

Germany DEX

Citizen of: Germany

Post Office Address: same as residence

5-00 Eckehardt Wistuba  
NAME OF INVENTOR

Eckehardt Wistuba  
Signature of Inventor

Date January 7, 1999

Im Obergarten 7  
67098 Bad Dürkheim  
Germany DEX  
Citizen of: Germany  
Post Office Address: same as residence

6-00 Thomas Koch  
NAME OF INVENTOR

Thomas Koch Thomas Koch  
Signature of Inventor

Date January 7, 1999

Goethestr. 112  
67165 Waldsee  
Germany DEX  
Citizen of: Germany  
Post Office Address: same as residence

7-00 Georg Langhauser  
NAME OF INVENTOR

Georg Langhauser  
Signature of Inventor

Date January 7, 1999

Hauptstr.31  
67152 Ruppertsberg  
Germany DEX  
Citizen of: Germany  
Post Office Address: same as residence

We (I) hereby claim the benefit under Title 35, United States Codes, § 119(e) of any United States provisional application(s) listed below.

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

We (I) hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

**Application Serial No.**

**Filing Date**

**Status (pending, patented,  
abandoned)**

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

And we (I) hereby appoint:

Norman F. Oblon, Registration Number 24, 618;  
Marvin J. Spivak, Registration Number 24, 913;  
Gregory J. Maier, Registration Number 25, 599;  
William E. Beaumont, Registration Number 30, 996;  
Steven B. Kelber, Registration Number 30, 073;  
Jean-Paul Lavalleye, Registration Number 31, 451;  
Timothy R. Schwartz, Registration Number 32, 171;  
Stephen G. Baxter, Registration Number 32, 884;  
Richard L. Treanor, Registration Number 36, 379;  
Robert W. Hahl, Registration Number 33, 893;

our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to the firm of **OBLON, SPIVAK, McCLELLAND, MAIER & NEUSTADT, P. C.**, whose Post Office Address is: Fourth Floor, 1755 Jefferson Davis Highway, Arlington, Virginia 22202.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.